United States
Department of
Agriculture

Soil
Conservation
Service

Bozeman,
Montana

Montana
Water Supply Outlook

March 1, 1987

Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are termed reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. Because of the limited space, snow survey measurements are not published in monthly reports. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado	2490 West 26th Ave., Denver, CO 80211
New Mexico	517 Gold Ave. S.W., Room 3301, Albuquerque, NM 97102
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	1201 Terminal Way, Room 219, Reno, NV 89502
Oregon	1220 Southwest 3rd Ave., Room 1640, Portland, OR 97208
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82601

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 547, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Environment Technical Services Division, 9820 106th St., Edmonton, Alberta T5K 2J6.

Montana
Water Supply Outlook

and

Federal – State – Private
Cooperative Snow Surveys

Issued by

Wilson Scaling
Chief
Soil Conservation Service
Washington, D.C.

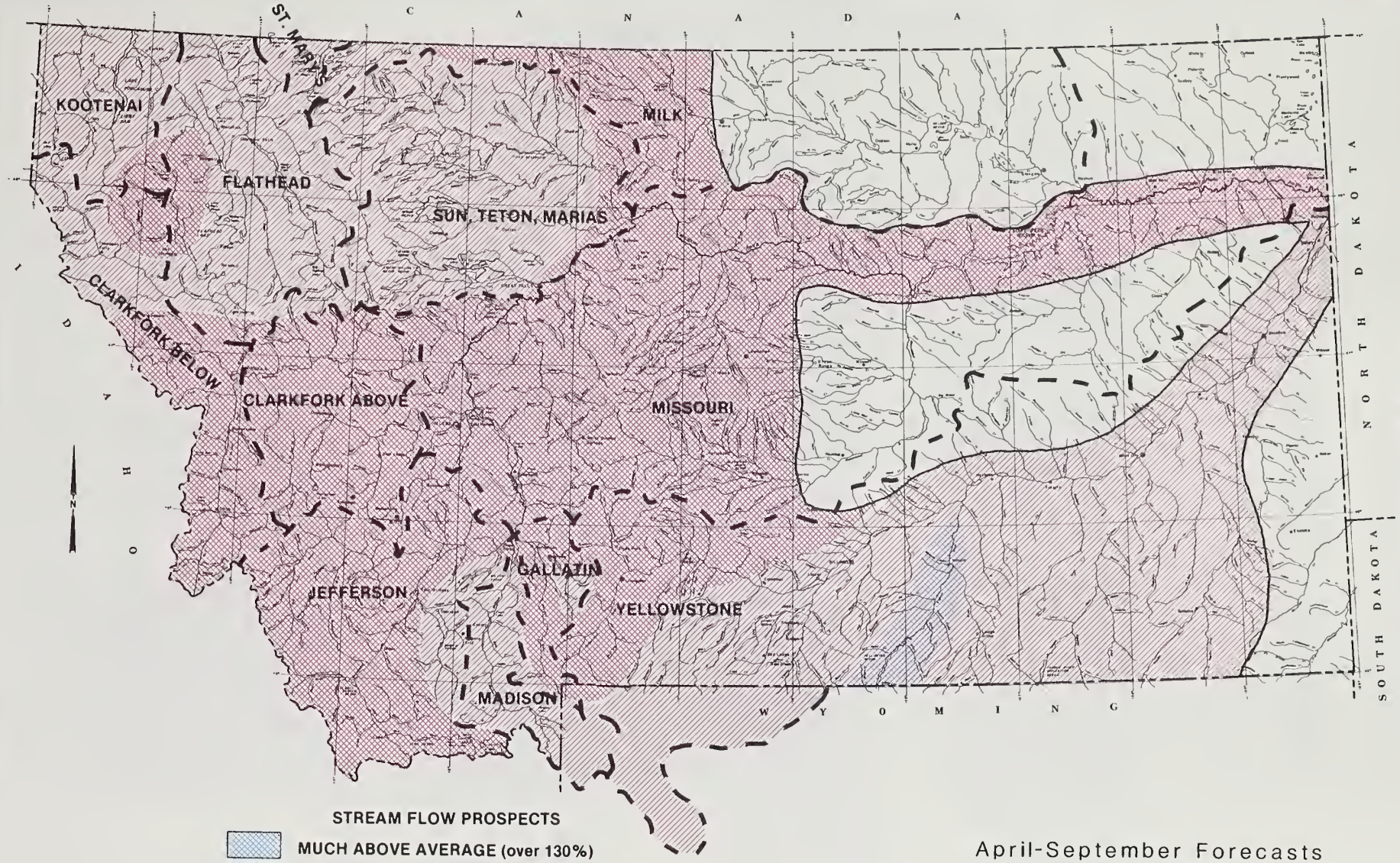
Released by

Glen H. Loomis
State Conservationist
Soil Conservation Service
Bozeman, Montana

Prepared by

Phillip E. Farnes
Snow Survey Supervisor
Soil Conservation Service
10 E. Babcock
Bozeman, Montana 59715

Table of Contents



STREAMFLOW PROSPECTS FOR MONTANA

Spring and Summer Period

STREAM FLOW PROSPECTS

- MUCH ABOVE AVERAGE (over 130%)
- ABOVE AVERAGE (110-130%)
- NEAR AVERAGE (90-110%)
- BELOW AVERAGE (70-90%)
- MUCH BELOW AVERAGE (below 70%)
- NOT FORECAST

April-September Forecasts

March 1,1987

0 25 50 75 100 MI

0 50 100 150 KM

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296

USDA SCS FORT WORTH, TEXAS 1985

GENERAL OUTLOOK

SUMMARY:

Most areas have experienced the third consecutive month of below average mountain precipitation. Snowpack levels are below average across the entire state with 20 of the 240 snow courses registering new record low water contents for this time of year. Streamflows are forecast to be below to well below average over most of the state. Widespread shortages of irrigation water supplies are expected by mid-June to early July.

SNOWPACK:

All areas in Montana have below average snowpack with 20 snow courses reporting record low water contents. Depending on the areas, this year's snow cover is similar to other low years of 1977, 1961, and 1941. Most of the record-setting low readings are in central Montana but there are also some near Helena and Bozeman. The northwest and some parts of the southwest have better snowpack than other areas. Usually 80 percent of the season's snow accumulation has occurred by March 1, so time for any significant improvement is becoming short. In addition, abnormally warm temperatures in early March are melting the already deficient snowpacks. Across the state, snowpacks vary from less than 50 percent of average in central Montana and some parts of the Yellowstone River headwaters to 75 to 85 percent of average in the Kootenai, Flathead, St. Mary, Sun, Marias, and Teton River headwaters.

PRECIPITATION:

Mountain precipitation in an area from Lima to Virginia City to Butte to Lemhi Pass was near average for February. A few stations near Red Lodge and west of Choteau also reported about average moisture. Other areas were quite dry varying from about 10 percent of average amounts in the Bear Paw Mountains up to 40 to 60 percent of average levels across most other drainages. For most areas, February was the third consecutive month with below average precipitation.

RESERVOIRS:

Storage in most irrigation reservoirs is near or above average. Storage is now increasing at a faster rate than usual in anticipation of a dry season and because of early season runoff. It is expected that most reservoirs will be able to fill this spring. However, some of the drier areas may not be able to produce enough water for downstream uses or to completely fill the reservoirs.

STREAMFLOW:

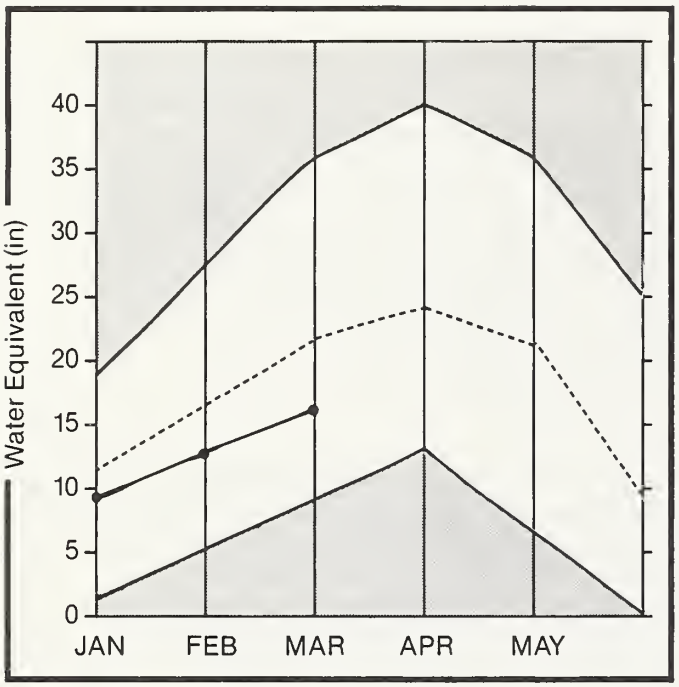
Spring and summer streamflows are forecast to be below to well below average on all streams and rivers. In some areas, forecasts are nearing record lows. If future weather patterns do not bring in better moisture levels, some areas could possibly have the lowest or near lowest runoff of record. Shortages of irrigation water are anticipated to be widespread by late June to early July.

SOIL MOISTURE:

Soil moisture stored under the snowpack is generally near or above average. The snowline in most areas is quite high for this time of year. Soils not covered with snow are drying in the southern two-thirds of the state. Abnormally high temperatures in early March are hastening the drying process. Most valley areas are snow free and soils are drying enough to permit some agricultural activity.

Kootenai Basin

Mountain snowpack* (inches)



*Kootenai in Montana

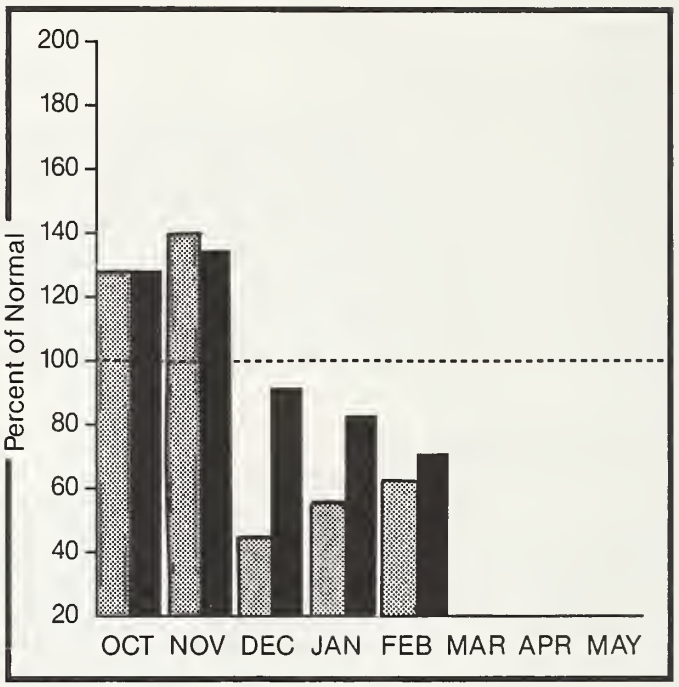
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation for February was about two-thirds of average. The accumulated snowpack is below average in both British Columbia and Montana. The area between Libby and Kalispell has the most deficient snowpack. Streamflows are forecast around 80 percent of average on the Kootenai River and about 70 percent on smaller tributary streams in Montana.

For more information contact your local Soil Conservation Service office.

KOOTENAI RIVER BASIN in Montana

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
KOOTENAI RIVER blw Libby Dam 2	APR-JUL	5885.0	4910.0	83	6090.0	103	3730.0	63
	APR-SEP	6903.0	5760.0	83	7140.0	103	4380.0	63
FISHER RIVER near Libby	APR-JUL	240.0	171.0	71	233.0	97	109.0	45
	APR-SEP	256.0	183.0	71	250.0	98	116.0	45
YAAK RIVER near Troy	APR-JUL	494.0	354.0	72	482.0	98	226.0	46
	APR-SEP	517.0	380.0	74	514.0	99	246.0	48
KOOTENAI RIVER at Leonia 2	APR-JUN	5899.0	4890.0	83	6070.0	103	3710.0	63
	APR-JUL	7340.0	6100.0	83	7570.0	103	4630.0	63
	APR-SEP	8441.0	7010.0	83	8700.0	103	5320.0	63

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE KOOCANUSA	5748.0	2205.0	2108.0	1998.0

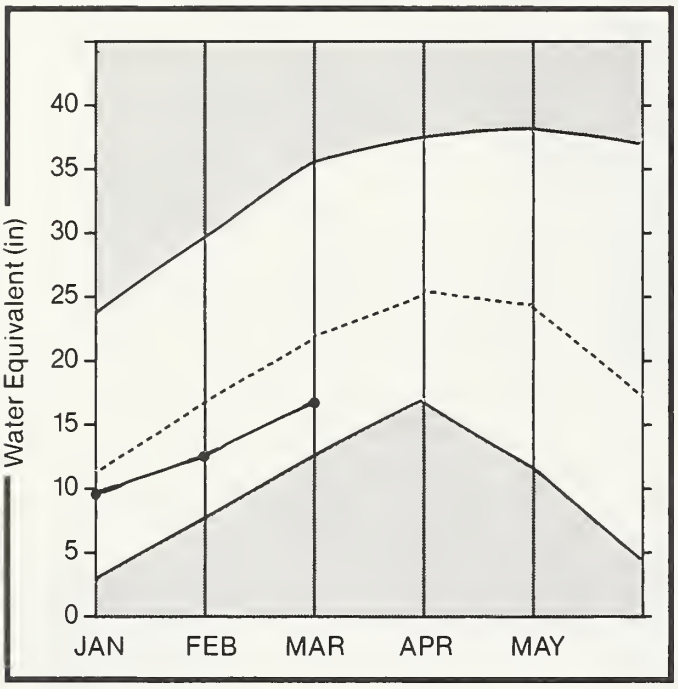
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
EAST KOOTENAI in B.C.	25	84	82
KOOTENAI in MONTANA	32	97	73
KOOTENAI ab BONNERS FERRY	55	91	77

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Flathead Basin

Mountain snowpack* (inches)



*Flathead

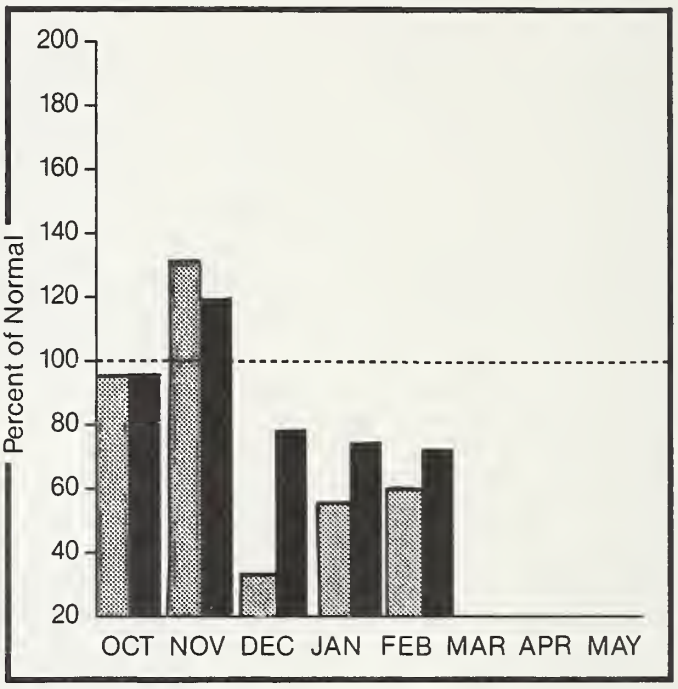
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack is currently below average in all parts of the watershed. The lowest levels are in the area west of Kalispell where snowpacks are generally in the 55 to 65 percent of average range. Mountain precipitation over the drainage was about 60 percent of average in February. Spring and summer streamflows are forecast to be in the 75 to 85 percent of average range.

For more information contact your local Soil Conservation Service office.

FLATHEAD RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
NF FLATHEAD near Columbia Falls	APR-JUN	1440.0	1270.0	88	1500.0	104	1040.0	72
	APR-JUL	1701.0	1500.0	88	1770.0	104	1230.0	72
	APR-SEP	1880.0	1650.0	88	1950.0	104	1350.0	72
MF FLATHEAD near West Glacier	APR-JUN	1422.0	1230.0	86	1460.0	103	1000.0	70
	APR-JUL	1680.0	1450.0	86	1720.0	102	1180.0	70
	APR-SEP	1836.0	1580.0	86	1870.0	102	1290.0	70
SF FLATHEAD near Columbia Falls 1	APR-JUN	1854.0	1480.0	80	1890.0	102	1070.0	58
	APR-JUL	2110.0	1690.0	80	2200.0	104	1180.0	56
	APR-SEP	2248.0	1800.0	80	2450.0	109	1150.0	51
FLATHEAD at Columbia Falls 1	APR-JUN	4824.0	4080.0	85	5050.0	105	3120.0	65
	ARP-JUL	5621.0	4770.0	85	5950.0	106	3590.0	64
	APR-SEP	6114.0	5180.0	85	6460.0	106	3900.0	64
SWAN RIVER near Big Fork	APR-JUL	597.0	452.0	76	548.0	92	356.0	60
	APR-SEP	683.0	512.0	75	621.0	91	403.0	59
FLATHEAD RIVER near Polson 2	APR-JUN	5637.0	4670.0	83	5570.0	99	3770.0	67
	APR-JUL	6586.0	5530.0	84	6580.0	100	4480.0	68
	APR-SEP	7150.0	6010.0	84	7150.0	100	4870.0	68

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CAMAS (4)	45.2	22.2	20.5	21.8
MISSION VALLEY (8)	100.0	31.5	44.3	37.5
HUNGRY HORSE	3451.0	2295.0	2281.0	2270.0
FLATHEAD LAKE	1791.0	635.1	812.5	909.0

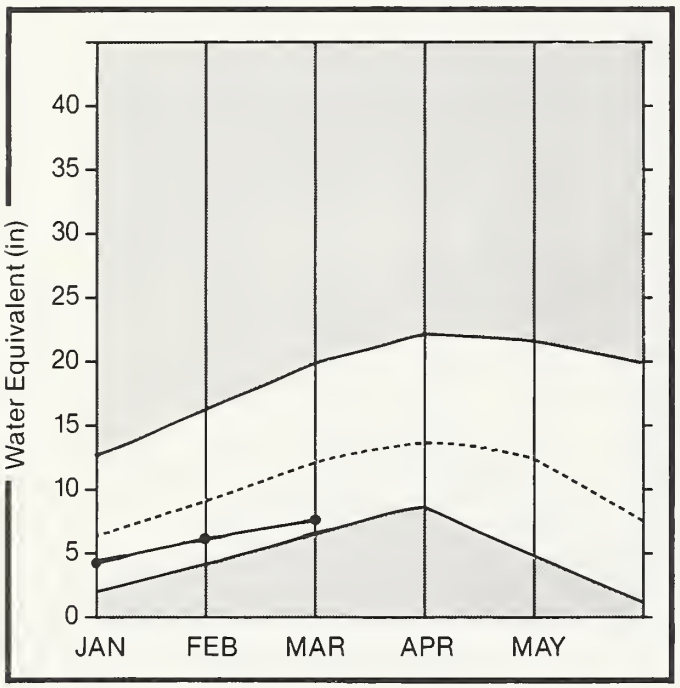
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
NORTH FORK FLATHEAD	15	109	81
MIDDLE FORK FLATHEAD	11	95	79
SOUTH FORK FLATHEAD	13	83	69
STILLWATER-WHITEFISH	9	88	70
SWAN	11	76	66
LITTLE BITTERROOT	8	71	60
FLATHEAD	47	90	74

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Clark Fork Basin above Missoula

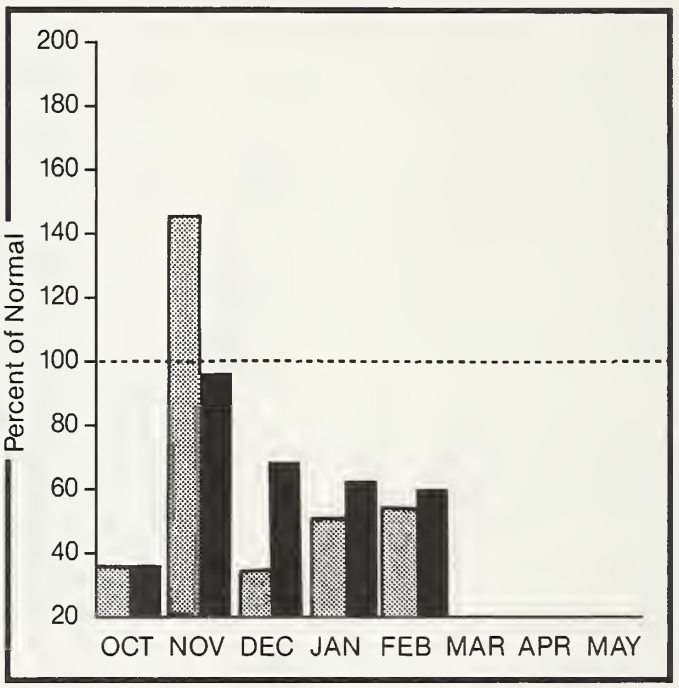
Mountain snowpack* (inches)



*Clark Fork above Missoula

Maximum
Average
Minimum
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation during February was only about 55 percent of average resulting in further decline in snowpack percentages. Current snowpack is about 62 percent of average over most of the headwater areas. However, near the end of February, snowfall was heavy south of Butte raising the snowpack in this area to the 75 to 85 percent of average level. Spring and summer streamflows are forecast to be in the 50 to 70 percent of average range. Shortages in irrigation water supplies can be expected to occur shortly after mid-June.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN above Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MOULTON RESERVOIR Inflow (MG)2	APR-JUN	237.0	142.0	60	204.0	86	80.0	34
	APR-JUL	263.0	158.0	60	226.0	86	90.0	34
WARM SPRINGS CR at Meyers Dam 2	APR-JUL	39.0	22.0	56	32.0	82	12.0	31
	APR-SEP	49.0	29.0	59	42.0	86	16.0	33
FLINT CREEK near Southern Cross 2	APR-JUL	14.8	10.0	68	15.0	101	5.0	34
	APR-SEP	17.8	12.1	68	19.0	107	6.0	34
FLINT CREEK below Boulder Creek 2	APR-JUL	61.0	42.0	69	64.0	105	20.0	33
	APR-SEP	78.0	54.0	69	82.0	105	26.0	33
LOWER WILLOW CR RES Inflow 2	APR-JUL	14.9	7.3	49	13.0	87	2.0	13
	APR-SEP	15.8	8.4	53	14.0	89	3.0	19
M. FK. ROCK CRK near Philipsburg	APR-JUL	69.0	47.0	68	65.0	94	29.0	42
	APR-SEP	77.0	52.0	68	72.0	94	32.0	42
NEVADA CREEK near Finn	APR-JUL	21.0	10.6	50	18.0	86	5.0	24
	APR-SEP	22.0	11.5	52	19.0	86	5.0	23
BLACKFOOT RIVER near Bonner	APR-JUN	753.0	450.0	60	570.0	76	330.0	44
	APR-JUL	874.0	520.0	59	660.0	76	380.0	43
	APR-SEP	969.0	590.0	61	745.0	77	435.0	45
CLARK FORK RIVER above Milltown 2	APR-JUN	591.0	380.0	64	569.0	96	191.0	32
	APR-JUL	703.0	450.0	64	675.0	96	225.0	32
	APR-SEP	812.0	520.0	64	780.0	96	260.0	32
CLARK FORK RIVER above Missoula	APR-JUN	1344.0	840.0	63	1190.0	89	490.0	36
	APR-JUL	1577.0	970.0	62	1380.0	88	560.0	36
	APR-SEP	1781.0	1120.0	63	1580.0	89	660.0	37

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GEORGETOWN LAKE	31.0	29.1	24.9	25.7
LOWER WILLOW CREEK	4.9	1.3	2.8	1.7
NEVADA CREEK	12.6	2.3	9.6	5.2

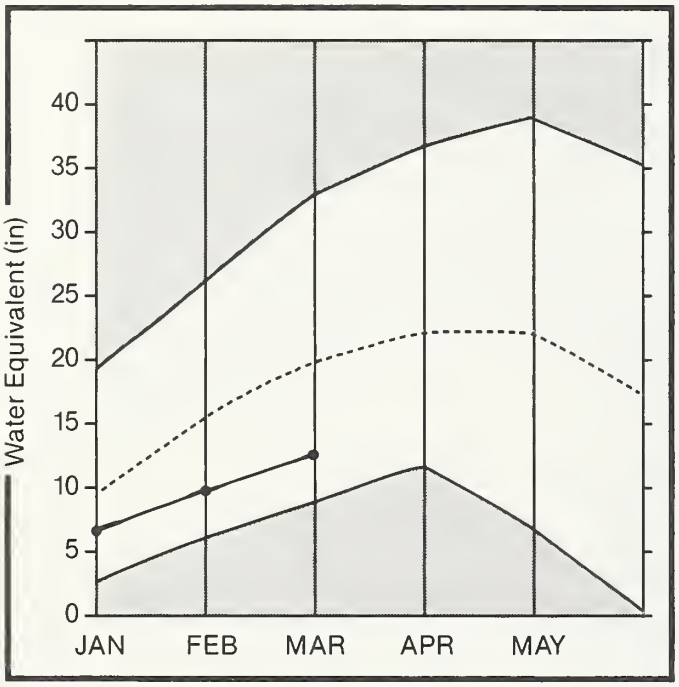
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK ab BLACKFOOT	44	67	62
BLACKFOOT	22	73	62
CLARK FORK above MISSOULA	60	70	62

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Clark Fork Basin below Missoula

Mountain snowpack* (inches)



*Bitterroot

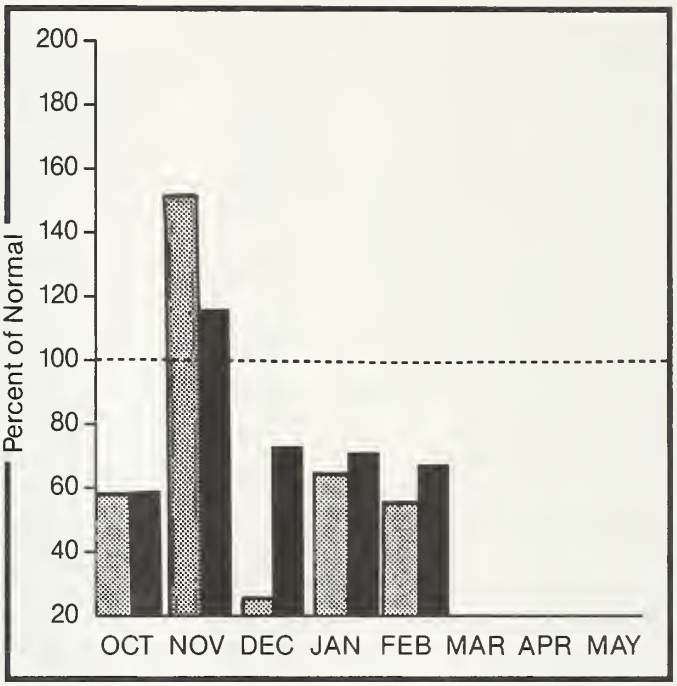
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpacks have deteriorated during February and are now about 65 to 70 percent of average. Mountain precipitation this past month was about 55 percent of average over the Bitterroot and lower Clark Fork drainage below Missoula. Spring and summer runoff is forecast to be only 60 to 65 percent of average. Irrigation water supplies are expected to become short by late June and early July.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN below Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
CLARK FORK RIVER above Missoula	APR-JUN	1344.0	840.0	63	1190.0	89	490.0	36
	APR-JUL	1577.0	970.0	62	1380.0	88	560.0	36
	APR-SEP	1781.0	1120.0	63	1580.0	89	660.0	37
W.F. BITTERROOT RIVER nr Conner 2	APR-JUL	147.0	94.0	64	132.0	90	56.0	38
	APR-SEP	169.0	104.0	62	148.0	88	60.0	36
BITTERROOT RIVER near Darby	APR-JUN	456.0	300.0	66	419.0	92	181.0	40
	APR-JUL	524.0	350.0	67	486.0	93	214.0	41
	APR-SEP	573.0	380.0	66	529.0	92	231.0	40
SKALKAHO CREEK near Hamilton	APR-JUL	46.0	30.0	65	37.0	80	23.0	50
	APR-SEP	54.0	35.0	65	44.0	81	26.0	48
BURNT FORK CR nr Stevensville 2	APR-JUL	32.0	21.0	66	29.0	91	13.0	41
	APR-SEP	38.0	24.0	63	34.0	89	14.0	37
BITTERROOT RIVER at Missoula 2	APR-JUN	1176.0	775.0	66	1080.0	92	470.0	40
	APR-JUL	1371.0	890.0	65	1250.0	91	535.0	39
	APR-SEP	1497.0	970.0	65	1360.0	91	580.0	39
CLARK FORK RIVER below Missoula	APR-JUN	2520.0	1620.0	64	2070.0	82	1170.0	46
	APR-JUL	2948.0	1870.0	63	2400.0	81	1340.0	45
	APR-SEP	3276.0	2080.0	63	2670.0	82	1490.0	45
CLARK FORK RIVER at St. Regis	APR-JUN	3340.0	2100.0	63	3140.0	94	1070.0	32
	APR-JUL	3894.0	2440.0	63	3650.0	94	1230.0	32
	APR-SEP	4325.0	2710.0	63	4050.0	94	1370.0	32
CLARK FORK RIVER near Plains 2	APR-JUN	9241.0	6930.0	75	8960.0	97	4900.0	53
	APR-JUL	10850.0	8090.0	75	10500.0	97	5700.0	53
	APR-SEP	11930.0	8890.0	75	11500.0	96	6260.0	52
THOMPSON RIVER near Thompson Falls	APR-JUL	222.0	137.0	62	190.0	86	84.0	38
	APR-SEP	250.0	160.0	64	220.0	88	100.0	40
PROSPECT CREEK at Thompson Falls	APR-JUL	128.0	88.0	69	121.0	95	55.0	43
	APR-SEP	137.0	96.0	70	132.0	96	60.0	44
CLARK FORK at Whitehorse Rapids 2	APR-JUN	10360.0	7560.0	73	9940.0	96	5180.0	50
	APR-JUL	12150.0	8870.0	73	11700.0	96	6080.0	50
	APR-SEP	13370.0	9790.0	73	12900.0	96	6720.0	50

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
PAINTED ROCKS LAKE		NO REPORT		
NOXON RAPIDS	335.0	291.7	322.8	298.0
COMO	34.9	9.0	16.1	13.4

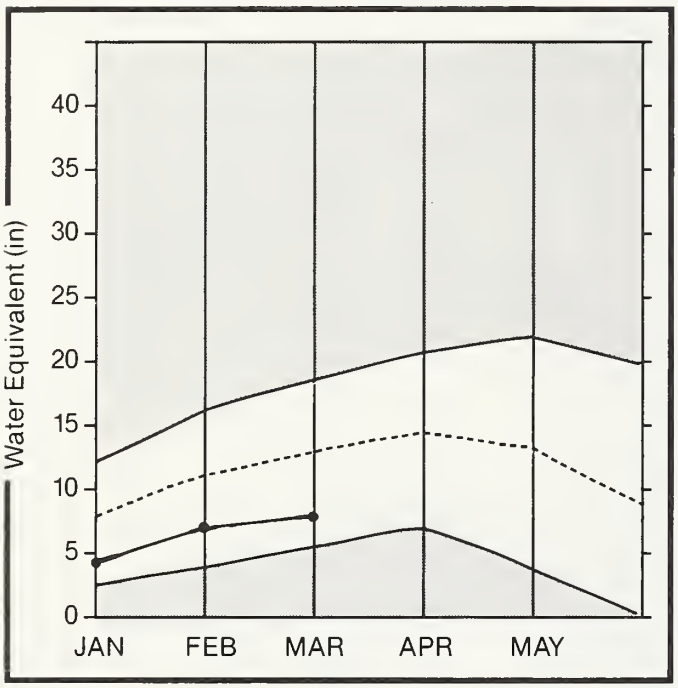
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK above MISSOULA	60	70	62
BITTERROOT	22	70	64
LWR CLARK FK blw MISSOULA	24	85	68
BITTERROOT & LWR C.F.	44	79	67
CLARK FORK TOTAL	99	75	65
FLATHEAD	47	90	74
PEND O'REILLE	140	80	68

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Jefferson Basin

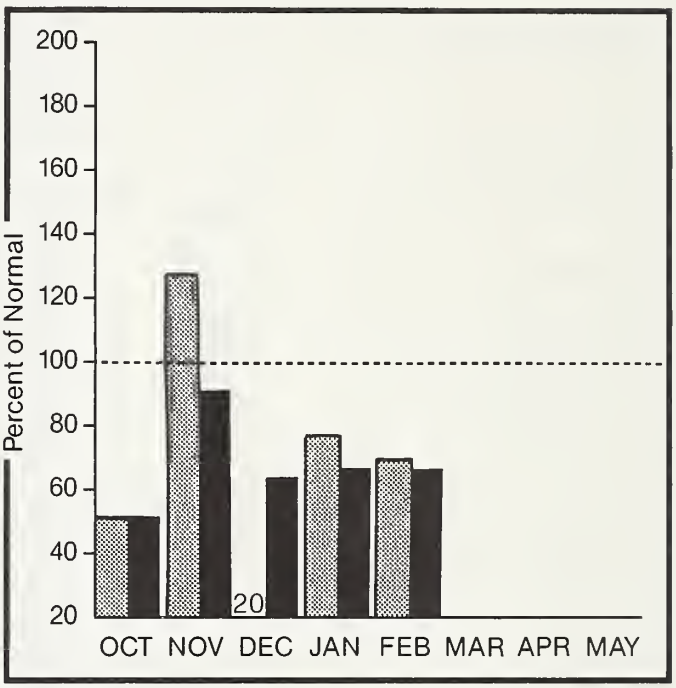
Mountain snowpack* (inches)



*Jefferson

Maximum
Average
Minimum
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowfall near the end of February was quite heavy in a band from Idaho through Lima, Virginia City, Butte and back to Lemhi Pass. Within this area, precipitation totaled near average for the month. Outside this area, February precipitation in the mountains was only about 50 percent of average and snowpacks are about 50 to 60 percent of average. Streamflows are forecast to be in the 60 to 80 percent of average range during the spring and summer months. Irrigation water supplies are expected to become in short supply by late June to early July.

For more information contact your local Soil Conservation Service office.

JEFFERSON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
RED ROCK RIVER near Monida 2	APR-JUL	105.0	65.6	62	101.0	96	30.0	29
	APR-SEP	114.0	70.0	61	109.0	96	31.0	27
BEAVERHEAD RIVER near Grant 2	APR-JUL	149.0	90.0	60	141.0	95	39.0	26
	APR-SEP	174.0	100.0	57	159.0	91	41.0	24
BEAVERHEAD RIVER at Barratts 2	APR-JUL	192.0	112.0	58	177.0	92	47.0	24
	APR-SEP	224.0	129.0	58	205.0	92	53.0	24
RUBY RIVER near Alder	APR-JUL	89.0	69.0	78	97.0	109	41.0	46
	APR-SEP	106.0	83.0	78	117.0	110	49.0	46
BIG HOLE RIVER near Melrose	APR-JUL	696.0	460.0	66	669.0	96	251.0	36
	APR-SEP	757.0	495.0	65	722.0	95	268.0	35
WILLOW CREEK near Harrison	APR-JUL	18.7	15.0	80	22.0	118	8.0	43
	APR-SEP	21.0	16.6	79	24.0	114	9.0	43

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY1	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LIMA	84.0	29.6	25.6	37.5
CLARK CANYON	255.6	161.2	145.3	146.0
RUBY RIVER	38.8	31.5	29.7	27.2

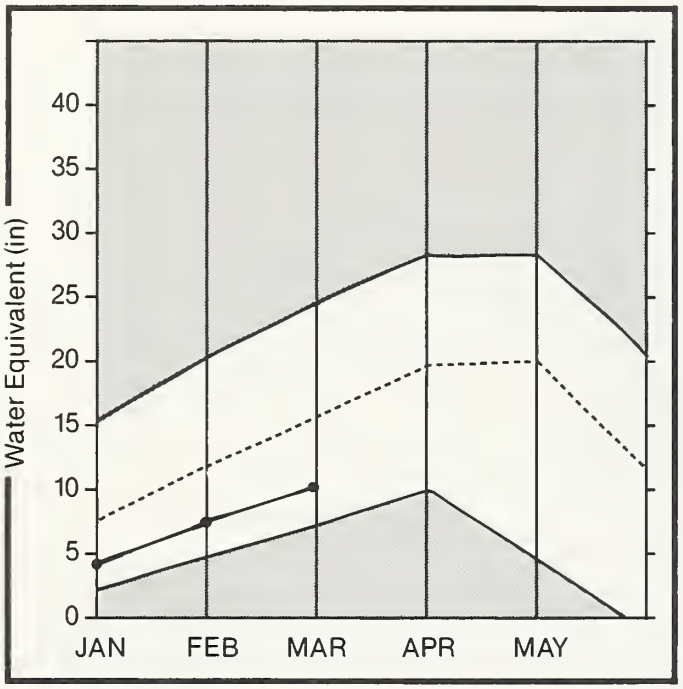
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
BEAVERHEAD	35	62	64
RUBY	14	77	73
BIGHOLE	27	64	65
BOULDER	15	63	62
JEFFERSON	72	64	65

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Madison Basin

Mountain snowpack* (inches)



*Madison

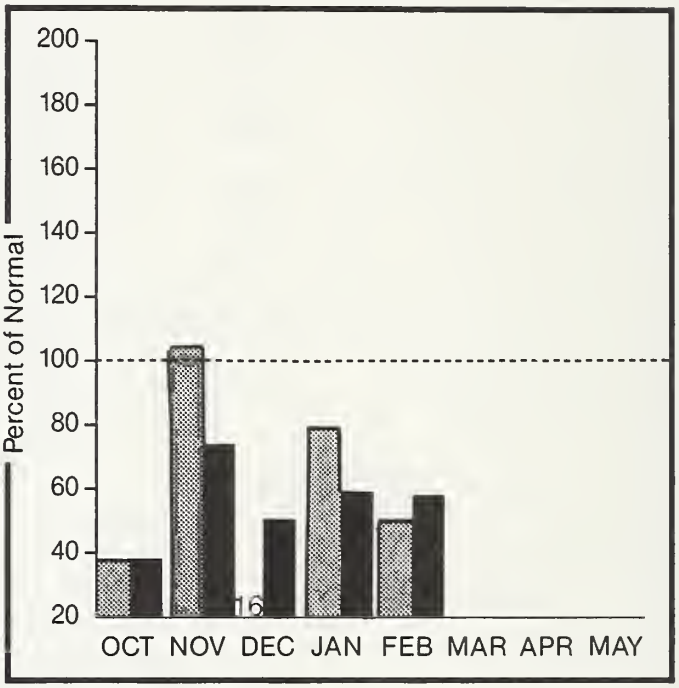
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation was about one-half of the normal amount during February. Current snowpack levels vary from about 50 percent of average in Yellowstone National Park up to the 70 to 80 percent range in the Tobacco Root Mountains and Gravelly Range. Spring and summer streamflows into Hebgen Lake are forecast to be around 85 percent of average with some of this runoff originating from the large underground flow. Downstream inflows will be less because of the smaller contribution from underground sources.

For more information contact your local Soil Conservation Service office.

MADISON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MADISON RIVER near Grayling 2	APR-JUL	390.0	330.0	85	400.0	103	260.0	67
	APR-SEP	499.0	425.0	85	515.0	103	335.0	67
MADISON RIVER near McAllister 2	APR-JUL	680.0	544.0	80	666.0	98	422.0	62
	APR-SEP	856.0	680.0	79	834.0	97	526.0	61

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
ENNIS LAKE	41.0	30.5	30.1	34.8
HEBGEN LAKE	377.5	282.3	277.1	235.3

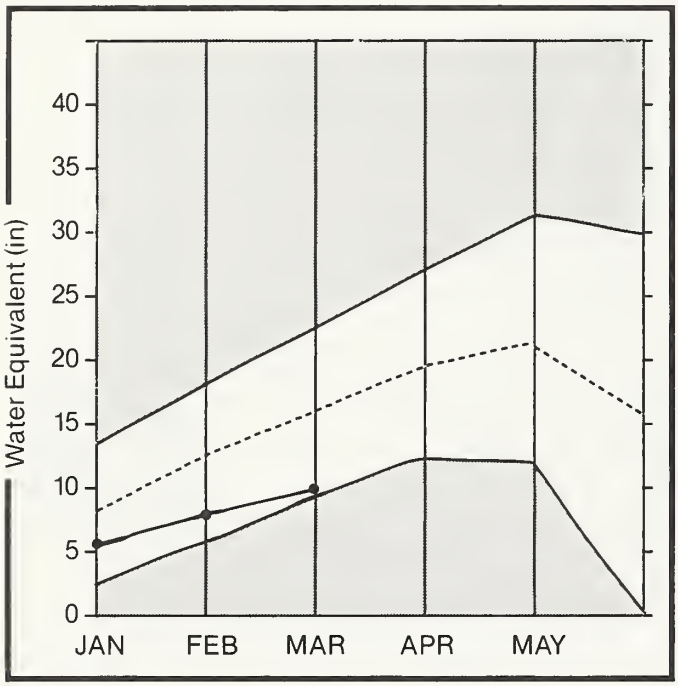
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MADISON above HEBGEN	17	47	55
LOWER MADISON	21	71	67
MADISON	38	58	61

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Gallatin Basin

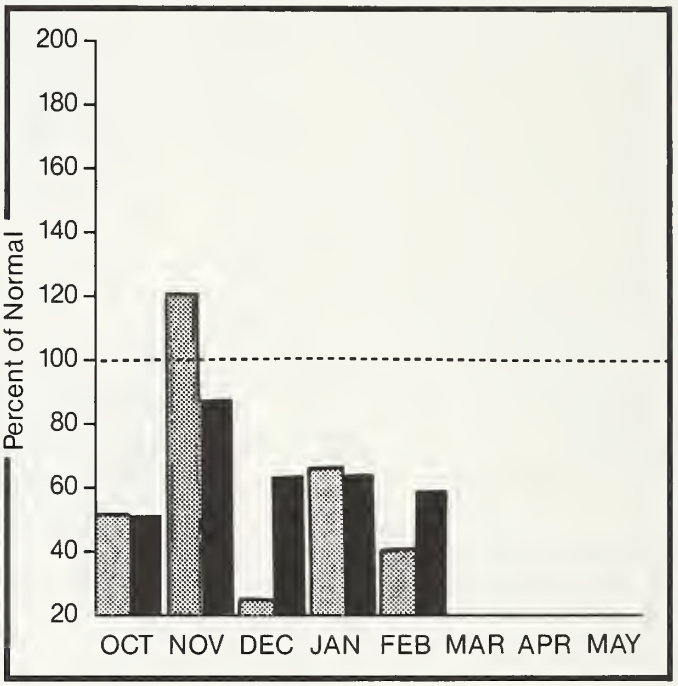
Mountain snowpack* (inches)



*Gallatin

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

The water contents measured at some snow courses in the Gallatin River drainage are at record lows for this time of year. This is a result of February precipitation being about 40 percent of average making it the third consecutive month of below average moisture. Snowpacks are currently about 60 percent of average. Streamflow forecasts for spring and summer are expected to be well below average. Irrigation water supplies are predicted to become short by late June to early July.

For more information contact your local Soil Conservation Service office.

GALLATIN RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
GALLATIN RIVER near Gateway	APR-JUL	460.0	308.0	67	391.0	85	225.0	49
	APR-SEP	540.0	360.0	67	457.0	85	263.0	49
E & W FK. HYALITE CR. nr Bozeman 2	APR-JUL	24.0	18.3	76	22.0	92	14.0	58
	APR-SEP	28.0	21.0	75	25.0	89	17.0	61
HYALITE CREEK near Bozeman 2	APR-JUL	38.0	28.6	75	36.0	95	21.0	55
	APR-SEP	44.0	33.0	75	42.0	95	24.0	55
GALLATIN RIVER at Logan	APR-JUL	528.0	285.0	54	422.0	80	148.0	28
	APR-SEP	616.0	338.0	55	498.0	81	178.0	29

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MIDDLE CREEK	8.0	4.7	6.3	3.6

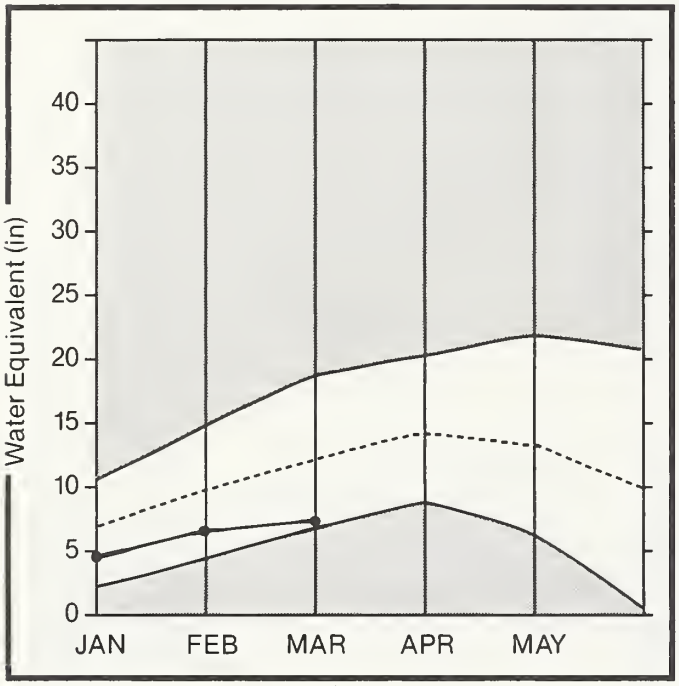
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
UPPER GALLATIN	15	69	62
EAST GALLATIN	13	86	61
GALLATIN	25	74	62

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Missouri Basin

Mountain snowpack* (inches)



*Missouri Toston to Fort Peck

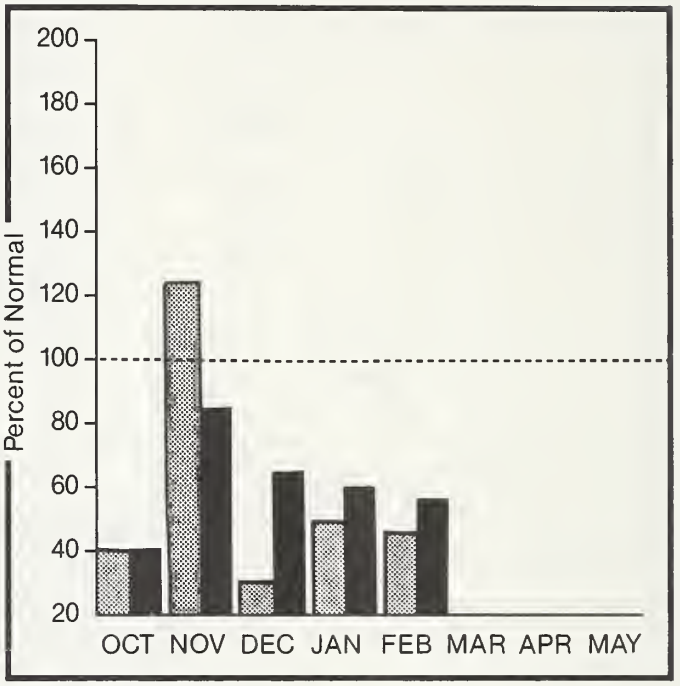
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

All areas received below average mountain precipitation during February with the amounts generally about one-half of the normal levels. Snowpacks are currently about 45 to 50 percent of average. Some snow courses in the Crazy, Belt, Castle and Snowy mountains have the lowest water content of record for this date. Below average runoff is expected from all drainages. Shortages in irrigation water from streams not having stored water are expected by mid- to late June.

For more information contact your local Soil Conservation Service office.

MISSOURI RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MISSOURI RIVER at Toston 2	APR-JUL	2250.0	1417.0	63	3398.0	151	450.0	20
	APR-SEP	2590.0	1670.0	64	3911.0	151	518.0	20
SHEEP CREEK nr White Sulphur Spgs.	APR-JUL	18.8	10.0	53	18.0	96	8.0	43
	APR-SEP	22.0	11.8	54	21.0	95	10.0	45
BELT CREEK near Monarch	APR-JUL	123.0	66.0	54	110.0	89	33.0	27
	APR-SEP	134.0	73.0	54	121.0	90	36.0	27
MISSOURI RIVER at Fort Benton 2	APR-JUL	3470.0	2075.0	60	5310.0	153	1075.0	31
	APR-SEP	3990.0	2405.0	60	6105.0	153	1237.0	31
MISSOURI RIVER at Virgelle 2	APR-JUL	3960.0	2310.0	58	6060.0	153	1425.0	36
	APR-SEP	4500.0	2795.0	62	6975.0	155	1620.0	36
MISSOURI RIVER near Landusky 2	APR-JUL	4310.0	2550.0	59	6900.0	160	1725.0	40
	APR-SEP	4900.0	3070.0	63	7840.0	160	1764.0	36
N.F. MUSSELSHELL near Delpine	APR-JUL	5.6	2.2	39	4.0	71	0.0	0
	APR-SEP	6.4	2.6	41	5.0	78	1.0	16
S.F. MUSSELSHELL above Martinsdale	APR-JUL	57.0	26.0	46	49.0	86	10.0	18
	APR-SEP	61.0	27.0	44	51.0	84	11.0	18
MISSOURI RIVER below Fort Peck 2	APR-JUL	4260.0	2500.0	59	6990.0	164	1405.0	33
	APR-SEP	4800.0	2920.0	61	7872.0	164	1584.0	33
LAKE SAKAKAWEA Inflow 2	APR-JUL	11000.0	7810.0	71	15000.0	136	4840.0	44
	APR-SEP	12200.0	8670.0	71	16592.0	136	5368.0	44

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CANYON FERRY LAKE	2043.0	1548.0	1482.0	1563.0
HELENA VALLEY	9.2	4.4	3.3	5.0
LAKE HELENA	10.4	10.9	10.9	10.1
HAUSER & HELENA	61.9	63.1	63.0	60.7
HOLTER LAKE	81.9	80.5	78.1	66.6
SMITH RIVER	10.6	7.4	5.5	7.2
NEWLAN CREEK	12.4	10.7	9.7	8.8
BAIR	7.0	6.7	2.0	4.5
MARTINSDALE	23.1	11.7	5.1	10.0
OEADMAN'S BASIN	72.2	59.2	34.8	48.3
FORT PECK LAKE *	18.9	15.9	13.8	14.9

*Million acre feet

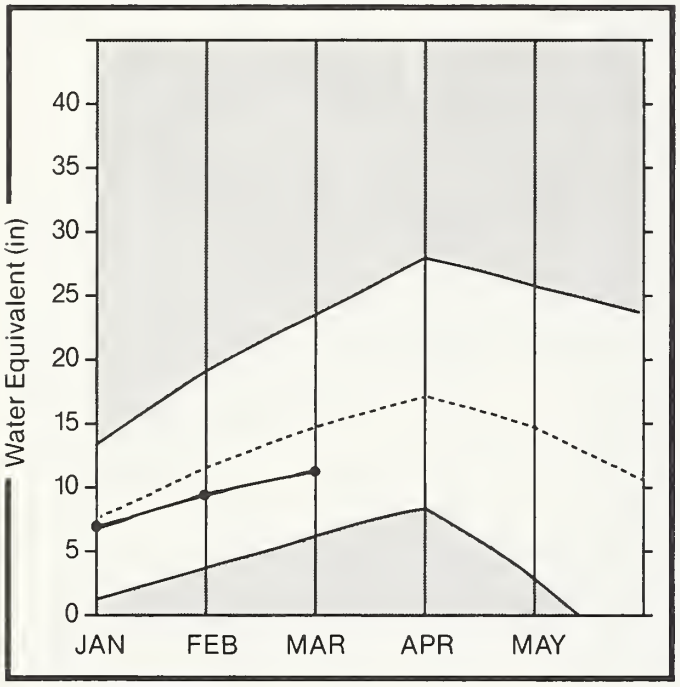
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MISSOURI HEADWATERS	118	63	63
WEST SIDE MISSOURI	11	62	61
SMITH-BELT	11	52	53
MISSOURI MAINSTEM	22	56	56
SUN-TETON-MARIAS	18	86	76
JUDITH-MUSSELSHELL	17	51	47
MISSOURI above FORT PECK	160	64	63
MILK HEADWATERS	4	108	76
BEAR PAW	7	119	50
MILK RIVER	11	110	68
MISSOURI in MONTANA	169	65	63
MISSOURI blw YELLOWSTONE	271	63	67

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Sun, Teton and Marias Basins

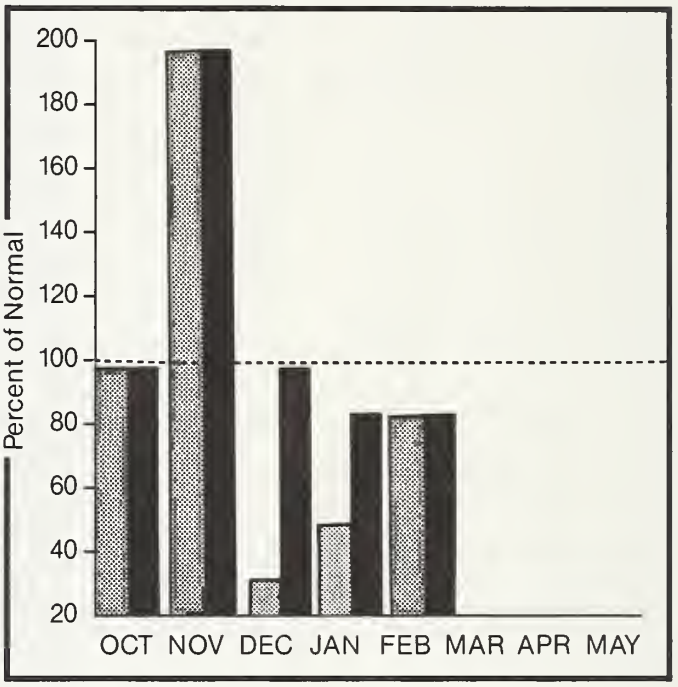
Mountain snowpack* (inches)



*Sun-Teton-Marias

Maximum
Average
Minimum
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation during February was about 15 percent below average. Currently, snowpack is in the 70 to 80 percent of average range. Spring and summer streamflows are forecast to be in the 75 to 90 percent of average range with the lower percentages in the southern drainages. Generally, water stored in upstream reservoirs is near or above average.

For more information contact your local Soil Conservation Service office.

SUN-TETON-MARIAS RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
SUN RIVER at Gibson Dam 2	APR-JUL	494.0	360.0	73	479.0	97	241.0	49
	APR-SEP	542.0	397.0	73	527.0	97	267.0	49
TWO MEDICINE CREEK near Browning 2	APR-JUL	222.0	180.0	81	260.0	117	100.0	45
	APR-SEP	235.0	190.0	81	270.0	115	110.0	47
BADGER CREEK near Browning	APR-JUL	107.0	94.0	88	133.0	124	55.0	51
	APR-SEP	123.0	109.0	89	151.0	123	67.0	54
SWIFT RESERVOIR Inflow nr Dupuyer	APR-JUL	70.0	60.0	86	85.0	121	35.0	50
	APR-SEP	82.0	71.0	87	99.0	121	43.0	52
CUT BANK CREEK at Cut Bank	APR-JUL	92.0	82.0	89	115.0	125	49.0	53
	APR-SEP	100.0	90.0	90	124.0	124	56.0	56
MARIAS RIVER near Shelby	APR-JUL	478.0	365.0	76	528.0	110	202.0	42
	APR-SEP	501.0	388.0	77	558.0	111	218.0	44

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GIBSON	99.1	56.4	68.1	46.4
PISHKUN	32.0	18.9	18.1	18.1
WILLOW CREEK	32.2	27.3	22.5	20.3
LOWER TWO MEDICINE LAKE	11.9	12.0	---	8.0
FOUR HORNS LAKE	19.2	13.5	---	12.3
SWIFT	30.0	20.3	25.0	14.9
LAKE FRANCES	112.0	83.2	66.9	68.5
LAKE ELWELL (TIBER)	1347.0	685.0	774.2	555.2

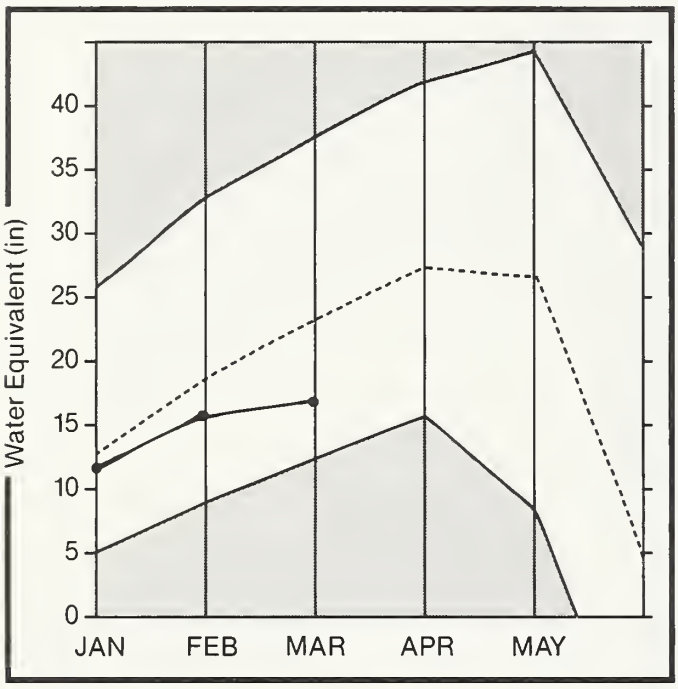
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
SUN-TETON	13	81	72
MARIAS	6	91	80
SUN-TETON-MARIAS	18	86	76

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

St. Mary and Milk Basins

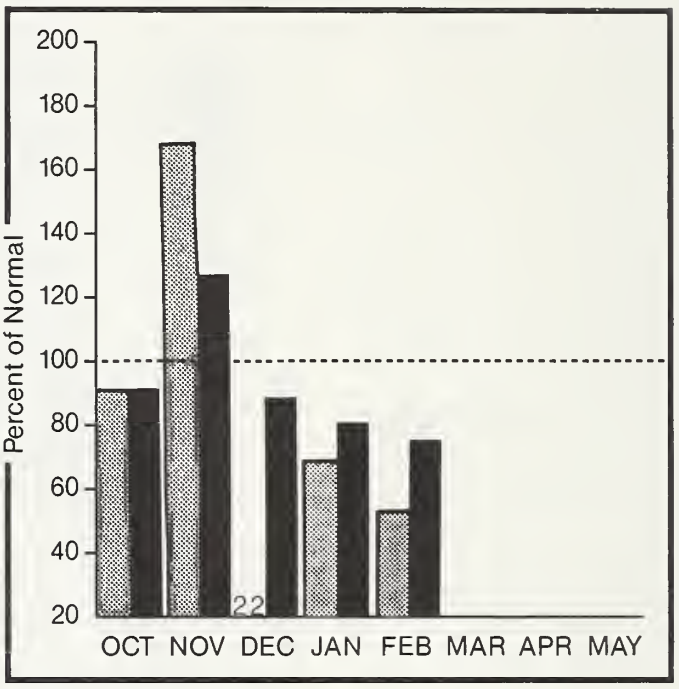
Mountain snowpack* (inches)



*St. Mary

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation during February was about one-half of normal across the St. Mary drainages and only 10 percent of average in the Bear Paw Mountains. Current snowpack varies from about 50 percent of average in the Bear Paw Mountains to 75 percent of average in the St. Mary River headwaters. Irrigation water for those not having stored water will be in short supply unless there is a drastic shift in weather patterns.

For more information contact your local Soil Conservation Service office.

ST. MARY and MILK RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
SWIFTCURRENT CREEK at Sherburne 2	APR-JUL	110.0	91.0	83	115.0	105	67.0	61
	APR-SEP	128.0	108.0	84	136.0	106	80.0	63
ST. MARY RIVER near Babb 2	APR-JUL	404.0	329.0	81	394.0	98	264.0	65
	APR-SEP	474.0	389.0	82	465.0	98	313.0	66
MILK RIVER at Eastern Crossing	MAR-SEP	270.0	252.0	93				
MILK RIVER at Eastern Crossing 2	MAR-SEP	97.0	62.0	64	125.0	129	48.0	49

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE SHERBURNE	64.3	41.2	40.9	24.1
FRESNO	127.0	64.3	59.4	51.5
BEAVER CREEK	3.5	3.3	3.3	2.0
NELSON	66.8	43.4	33.2	36.0

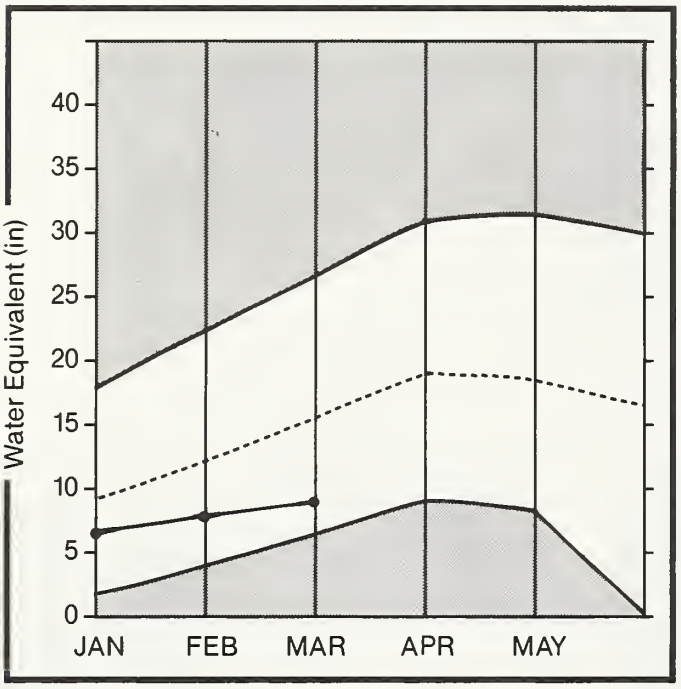
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MILK HEADWATERS	4	108	76
BEAR PAW	7	119	50
MILK RIVER	11	110	68
ST. MARY	7	101	74
ST. MARY and MILK	14	103	70
BOW RIVER in ALBERTA	15	73	92
OLDMAN RIVER in ALBERTA	4	87	83

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Yellowstone Basin

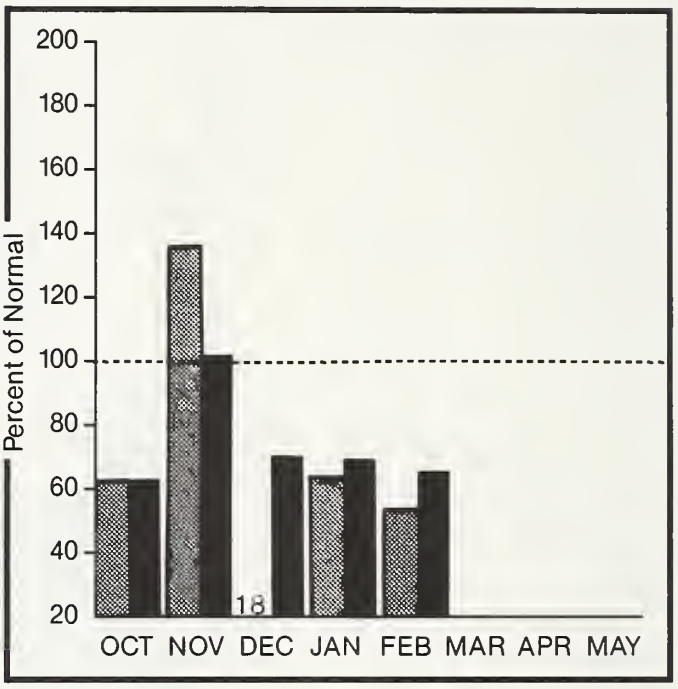
Mountain snowpack* (inches)



*Yellowstone above Big Horn

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack varies from about 85 percent of average in the Red Lodge mountain area to about one-half of average and record low levels in the Crazy Mountains. The Yellowstone River headwaters in Yellowstone National Park also have well below average snowpacks. Over the Yellowstone River drainage, mountain precipitation during February was only about 55 percent of average. Spring and summer streamflows are forecast to be well below average in the Upper Yellowstone and Shields drainages. Predicted flows for downstream tributaries are somewhat better but most are still below average. Irrigators who obtain water from smaller streams and who do not have stored water should anticipate water shortages starting as early as mid- to late June.

For more information contact your local Soil Conservation Service office.

YELLOWSTONE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
YELLOWSTONE at Lake Outlet	APR-JUL	590.0	455.0	77	549.0	93	361.0	61
	APR-SEP	818.0	630.0	77	761.0	93	499.0	61
YELLOWSTONE at Corwin Springs	APR-JUL	1650.0	1121.0	68	1385.0	84	857.0	52
	APR-SEP	2000.0	1355.0	68	1675.0	84	1035.0	52
YELLOWSTONE near Livingston	APR-JUL	1920.0	1260.0	66	1567.0	82	953.0	50
	APR-SEP	2330.0	1530.0	66	1903.0	82	1157.0	50
BOULDER RIVER at Big Timber	APR-JUL	353.0	248.0	70	333.0	94	163.0	46
	APR-SEP	384.0	265.0	69	357.0	93	173.0	45
STILLWATER RIVER nr Absarokee 2	APR-JUL	524.0	398.0	76	566.0	108	230.0	44
	APR-SEP	625.0	480.0	77	680.0	109	280.0	45
CLARKS FORK RIVER near Belfry	APR-JUL	540.0	436.0	81	598.0	111	274.0	51
	APR-SEP	603.0	485.0	80	666.0	110	304.0	50
COONEY RESERVOIR Inflow	APR-JUL	49.0	42.0	86	58.0	118	26.0	53
	APR-SEP	60.0	51.0	85	70.0	117	32.0	53
YELLOWSTONE RIVER at Billings	APR-JUL	3740.0	2690.0	72	3630.0	97	2095.0	56
	APR-SEP	4410.0	3190.0	72	4278.0	97	2470.0	56
BIGHORN RIVER near St. Xavier 2	APR-JUL	1750.0	1570.0	90	2450.0	140	1035.0	59
	APR-SEP	1900.0	1740.0	92	2660.0	140	1121.0	59
LITTLE BIGHORN RIVER near Hardin	APR-JUL	148.0	118.0	80	183.0	124	26.0	18
	APR-SEP	167.0	133.0	80	220.0	132	30.0	18
TONGUE RIVER near Decker	APR-JUL	234.0	200.0	85	328.0	140	70.0	30
	APR-SEP	260.0	220.0	85	364.0	140	78.0	30
YELLOWSTONE RIVER at Miles City 2	APR-JUL	5640.0	4390.0	78	6430.0	114	3045.0	54
	APR-SEP	6510.0	5110.0	78	7421.0	114	3515.0	54
POWDER RIVER at Moorehead	APR-JUL	230.0	207.0	90	329.0	143	76.0	33
	APR-SEP	251.0	225.0	90	360.0	143	83.0	33
YELLOWSTONE RIVER near Sidney 2	APR-JUL	6260.0	4850.0	77	7200.0	115	3192.0	51
	APR-SEP	7200.0	5580.0	78	8280.0	115	3672.0	51

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MYSTIC LAKE	21.0	2.1	2.2	6.5
COONEY	27.4	16.3	18.4	20.7
BIGHORN LAKE	1356.0	812.0	733.5	682.0
TONGUE RIVER		NO REPORT		

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
YELLOWSTONE ab LIVINGSTON	25	52	60
SHIELDS	10	71	53
BOULDER-STILLWATER	7	67	70
CLARK'S FORK-ROCK CREEK	21	56	65
YELLOWSTONE above BIGHORN	49	60	61
LITTLE BIGHORN	5	63	71
WIND RIVER (Wyoming)	30	59	103
BIGHORN RIVER (Wyoming)	34	57	76
BIGHORN BASIN (Total)	59	59	85
TONGUE RIVER (Wyoming)	15	65	79
POWDER RIVER (Wyoming)	15	68	80
YELLOWSTONE RIVER	118	61	73

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

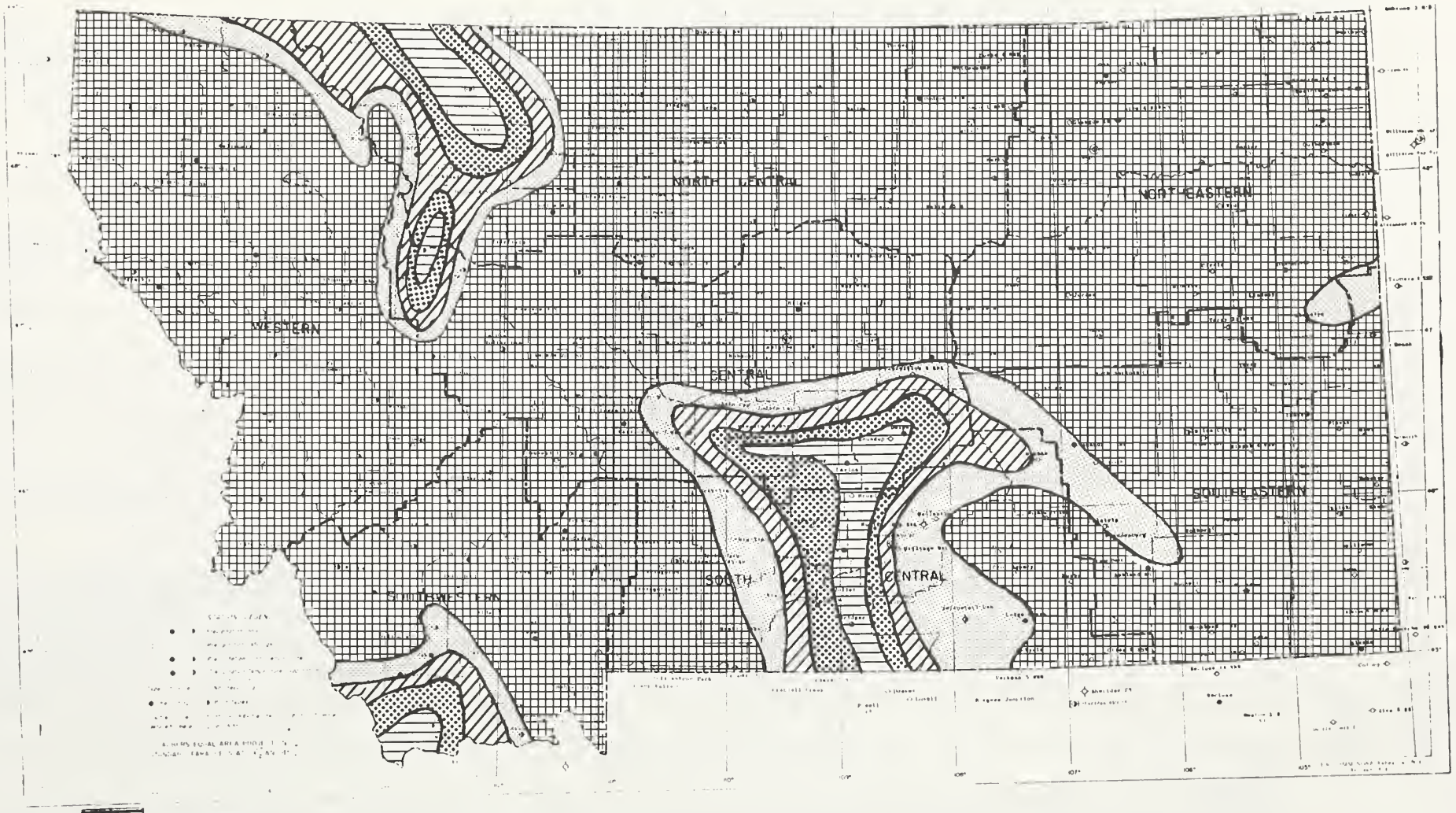
Snow Data Measurements

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
MONTANA						
ABUNDANCE LAKE	8800	2/28/87	51	11.0	17.2	17.6
AMBROSE	6480	2/28/87	24	6.2	11.0	11.3
ARCH FALLS	7350	2/25/87	26	5.8	6.0	10.1
ASHLEY DIVIDE	4820	2/26/87	18	3.6	7.0	6.2
BADGER PASS PILLOW	6900	3/01/87	---	23.9	31.0	29.5
BALD RIDGE	7500	2/24/87	24	5.0	7.8	10.9
BAREE CREEK	5500	2/25/87	82	29.4	28.3	41.0
BAREE MIDWAY	4600	2/25/87	61	19.9	22.1	31.9
BAREE TRAIL	3800	2/25/87	25	6.7	8.6	8.8
BARKER LAKES PILLOW	8250	3/01/87	---	10.3	12.2	12.7
BASIN CREEK	7180	2/24/87	41	5.6	6.8	7.0
BASIN CREEK PILLOW	7180	3/01/87	---	5.3	5.0	6.9
BASSOO PEAK	5150	2/27/87	24	5.8	6.4	10.5
BEAGLE SPRINGS	8850	3/02/87	31	7.4	8.8	7.5
BEAGLE SPGS PILLOW	8850	3/01/87	---	5.6	8.4	6.9
BEAR BASIN	8150	2/26/87	40	11.0	14.6	18.2
BEAR PAW SKI AREA	5200	2/26/87	13	2.8	2.5	6.6
BEAVER CREEK PILLOW	7850	3/01/87	---	9.0	16.4	15.8
BERRY MEADOW	7000	3/02/87	19	4.6	6.8	6.8
BIG CREEK	6750	3/04/87	80	24.0	35.4	38.2
BIG SKY	7700	3/02/87	35	9.0	12.6	13.2
BIG SKY MEADOW	6350	2/26/87	25	5.3	7.6	8.5
BIG SNOWY	7150	2/24/87	34	8.0	19.4	18.2
BLACK BEAR	7950	2/27/87	61	18.8	44.9	35.0
BLACK BEAR PILLOW	7950	3/01/87	---	18.9	39.8	31.8
BLACK MOUNTAIN	7750	2/25/87	30	7.0	9.6	13.0
BLACK PINE PILLOW	7100	3/01/87	---	6.4	10.2	12.1
BLACK PINE	7100	2/26/87	27	6.4	8.6	11.8
BLOODY DICK PILLOW	7550	3/01/87	---	7.7	12.5	10.9
BLOODY DICK	7600	3/02/87	30	7.2	12.7	11.8
BOTS SOTS	7750	2/23/87	21	4.1	6.2	6.3
BOULDER MOUNTAIN	7950	2/23/87	40	8.6	18.3	16.5
BOULDER MTN PILLOW	7950	3/01/87	---	12.0	17.6	17.9
BOX CANYON	6670	2/28/87	25	6.6	8.6	10.5
BOX CANYON PILLOW	6700	3/01/87	---	6.8	7.4	8.4
BOXELDER CREEK	5100	2/26/87	25	5.8	4.2	7.5
BRANHAM LAKES	8850	2/27/87	65	19.8	26.4	25.0
BRIDGER BOWL PILLOW	7250	2/24/87	---	12.6	14.0	21.7
BRIDGER BOWL	7250	2/24/87	44	12.8	14.6	22.6
BRUSH CREEK TIMBER	5000	2/25/87	24	5.1	7.4	9.0
BULL MOUNTAIN	6600	2/26/87	23	4.6	5.8	5.1
CABIN CREEK	5200	2/28/87	21	4.2	5.2	6.0
CALL ROAD	8050	3/03/87	29	7.4	7.9	9.8
CALVERT CREEK	6430	2/25/87	26	5.2	10.0	10.2
CALVERT CR PILLOW	6430	3/01/87	---	4.6	8.3	8.4
CAMP SENIA	7890	2/23/87	13	2.6	4.4	4.8
CARROT BASIN PILLOW	9000	3/01/87	---	16.2	24.2	23.3
CARROT BASIN	9000	2/23/87	65	18.8	30.8	30.6
CASHE CREEK PILLOW	7800	3/01/87	---	5.9	7.7	7.9
CHESSMAN RESERVOIR	6200	2/27/87	8	1.5	3.4	3.4
CHICKEN CREEK	4060	2/24/87	37	10.6	11.5	14.5
CLOVER MDW PILLOW	8800	3/01/87	---	11.0	14.8	14.7
CLOVER MEADOW	8600	3/03/87	40	10.6	11.4	14.4
COLE CREEK	7850	2/25/87	56	12.1	14.9	13.7
COLE CREEK PILLOW	7850	3/01/87	---	13.1	13.8	14.2
COLLEY CREEK	6300	2/25/87	19	3.6	5.4	7.3
COMBINATION	5600	2/26/87	14	3.2	5.0	5.0
COMBINATION PILLOW	5600	3/01/87	---	3.2	4.5	5.2
COOKE STATION	8150	2/25/87	38	9.1	18.3	17.1
COPPER BOTTOM PILLOW	5200	3/01/87	---	7.6	10.1	11.9
COPPER CAMP PILLOW	6950	3/01/87	---	16.6	25.3	30.6
COPPER MOUNTAIN	7700	2/23/87	27	4.0	7.6	9.6
COTTONWOOD CREEK	6400	2/25/87	19	3.7	4.8	6.9
COYOTE HILL	4200	2/27/87	28	7.0	9.2	9.7
CREVICE MOUNTAIN	8400	2/26/87	21	4.1	8.6	9.3
CRYSTAL LAKE	6050	2/24/87	26	5.1	9.6	11.8
CRYSTAL LAKE PILLOW	6050	3/01/87	---	6.1	8.8	11.7
DAD CREEK LAKE	8400	3/02/87	44	11.4	12.3	11.2
DAISY PEAK	7600	2/27/87	22	3.7	8.7	9.6
DALY CREEK	5780	2/26/87	25	6.6	9.9	10.0
DALY CREEK PILLOW	5780	3/01/87	---	6.2	11.4	9.5
DARKHORSE LK. PILLOW	8700	3/01/87	---	14.8	22.4	20.7
DEADMAN CR PILLOW	6450	3/01/87	---	4.6	8.4	9.2
DEADMAN CREEK	6450	2/25/87	24	4.7	8.4	10.1
DEVILS SLIDE	8100	2/25/87	42	11.8	13.4	18.5
DISCOVERY BASIN	7050	2/26/87	27	6.4	8.8	9.1
DIVIDE	7800	2/27/87	28	5.4	7.8	9.5
DIVIDE PILLOW	7800	3/01/87	---	5.8	9.1	10.0
DIX HILL	6400	2/22/87	27	6.4	10.8	11.1
DUPUYER CREEK PILLOW	5750	3/01/87	---	7.1	8.9	11.2
EAST FORK R.S.	5400	2/25/87	15	3.8	6.4	6.2
EL DORADO MINE	7800	2/24/87	49	12.3	12.2	17.4
ELK HORN SPRINGS	7800	2/28/87	20	3.3	7.6	8.1
ELK PEAK	8000	2/26/87	32	7.6	14.6	14.0
EMERY CREEK PILLOW	4350	3/01/87	---	10.6	12.0	14.4
FISH CREEK	8000	2/24/87	37	6.4	9.3	8.1
FISHER CREEK PILLOW	9100	3/01/87	---	19.6	33.8	30.9
FISHER CREEK	9100	2/25/87	63	19.6	37.8	32.7
FLATTOP MTN PILLOW	6300	3/01/87	---	31.7	32.4	40.7
FLEECER RIDGE	7500	2/26/87	33	7.0	8.8	9.3
FOOLHEN	8280	3/01/87	38	9.0	13.2	14.4
FOUR MILE	6900	2/26/87	30	6.2	6.6	7.3
FOURTH OF JULY	3450	2/24/87	26	6.7	7.8	8.5
FRED BURR PASS	8000	3/03/87	46	13.6	22.1	21.3
FRIDAY HILL	4620	2/24/87	44	13.1	11.6	18.7
FROHNER MEADOWS	6480	2/27/87	21	4.7	5.7	7.2
FROHNER MDWS PILLOW	6480	3/01/87	---	4.7	7.1	7.9
GIBBONS PASS	7100	2/25/87	41	11.6	19.8	20.5
GOAT MOUNTAIN	7000	3/01/87	32	6.8	6.7	9.4
GOLD CREEK LAKE	7200	2/24/87	32	8.4	9.6	12.9
GOLD STONE	8100	3/02/87	38	9.6	16.2	14.9
GRASSHOPPER	7000	2/26/87	12	2.8	4.4	5.0
GRAVE CRK PILLOW	4300	3/01/87	---	12.5	10.7	16.0
GRIFFIN CR DIVIDE	5150	2/27/87	26	6.4	7.8	10.5
HAND CREEK	5030	2/25/87	29	7.4	10.8	12.1
HAND CREEK PILLOW	5030	3/01/87	---	6.8	9.6	11.8
HEART LAKE TRAIL	4800	2/28/87	46	13.7	18.7	19.5
HEBGEN DAM	6550	2/28/87	30	6.3	10.4	11.1
HELL ROARING DIVIDE	5770	2/26/87	57	18.1	22.6	27.4
HERRIG JUNCTION	4850	2/24/87	57	17.6	17.4	24.3
HOLBROOK	4530	2/26/87	26	5.2	7.7	9.1
HOOD MEADOW	6600	2/25/87	23	5.3	5.2	9.0
HOODOO BASIN PILLOW	6050	3/01/87	---	27.3	35.4	41.4
HOODOO BASIN	6050	2/28/87	90	31.8	40.1	43.9
HOODOO CREEK	5900	2/28/87	79	27.4	33.1	40.7
INDEPENDENCE	7850	2/28/87	40	11.0	16.5	16.0
INTERGAARD	6450	2/24/87	21	4.4	6.4	7.1
JAHNKE LAKE TRAIL	7200	3/01/87	26	5.3	10.0	8.8
JOHNSON PARK	6450	2/27/87	13	2.7	4.9	6.6
KINGS HILL	7500	2/25/87	22	5.0	14.6	11.9
KIWANIS CAMP	3720	2/26/87	3	.4	.0	2.0
KRAFT CREEK PILLOW	4750	3/01/87	---	8.2	11.3	11.1
LAKE CREEK	6100	3/03/87	20	4.0	7.4	7.7
LAKEVIEW CANYON	6930	2/26/87	26	4.6	7.3	10.0
LAKEVIEW RDG. PILLOW	7400	3/01/87	---	5.9	9.0	11.2
LAKEVIEW RIDGE	7400	2/26/87	26	4.2	7.2	9.1
LEMHI PASS	7480	3/02/87	29	7.2	9.6	7.7
LEMHI RIDGE	8100	3/02/87	30	8.2	11.0	8.7
LEMHI RIDGE PILLOW	8100	3/01/87	---	6.8	10.5	9.2
LICK CREEK PILLOW	6860	3/01/87	---	6.8	6.8	8.4
LICK CREEK	6860	2/25/87	29	6.1	6.2	8.5
LITTLE PARK	7400	2/26/87	33	8.2	11.4	14.0
LOGAN CREEK	4300	2/25/87	18	4.4	5.4	7.0
LONE MOUNTAIN	8880	3/02/87	44	12.9	20.2	19.6
LOST HORSE	5940	3/03/87	64	20.5	26.5	28.7
LOWER TWIN PILLOW	7900	3/01/87	---	14.0	17.3	16.8
LOWER TWIN	7900	2/26/87	59	14.8	19.3	18.3
LUBRECHT FLUME	4680	2/27/87	13	3.6	4.1	5.5
LUBRECHT PILLOW	4680	3/01/87	---	3.6	6.7	5.5
LUBRECHT FOREST NO 3	5450	2/26/87	14	3.2	5.0	6.5
LUBRECHT FOREST NO 4	4650	2/26/87	8	1.8	2.2	3.3
LUBRECHT FOREST NO 6	4040	2/26/87	10	2.6	2.6	3.9
LUBRECHT HYDROPLOT	4200	2/27/87	18	4.0	4.1	6.8

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
MADISON PLT PILLOW	7750	2/27/87	---	11.8	24.2	20.6
MADISON PLATEAU	7750	2/27/87	44	11.9	25.2	19.3
MANY GLACIER	4900	2/27/87	41	12.4	10.2	18.5
MANY GLACIER PILLOW	4900	3/01/87	---	11.7	11.5	16.7
MARIAS PASS	5250	2/26/87	42	11.3	10.2	15.5
MAYNARD CREEK	6210	2/24/87	30	7.3	9.3	13.2
MAYNARD CR PILLOW	6210	2/24/87	---	5.5	8.6	9.6
MIDDLE MILL CREEK	7850	2/27/87	42	9.9	13.2	14.2
MILL CREEK	7500	2/25/87	28	6.2	7.5	11.0
MINERAL CREEK	4000	2/27/87	44	13.8	11.6	16.3
MONUMENT PK PILLOW	8850	3/01/87	---	11.7	19.8	17.8
MONUMENT PEAK	8850	2/28/87	50	13.6	25.0	22.9
MOSS PEAK	6720	3/04/87	79	27.8	30.7	--
MOSS PEAK PILLOW	6780	3/01/87	---	22.8	30.5	34.4
MOULTON RESERVOIR	6850	2/25/87	21	3.2	6.2	5.7
MT LOCKHART PILLOW	6400	3/01/87	---	14.5	19.7	18.1
MOUNT LOCKHART	6400	3/02/87	60	14.8	19.0	20.0
MUDD LAKE	7650	2/25/87	36	9.8	18.0	17.6
MULE CREEK	8300	2/24/87	44	9.0	12.7	12.7
MULE CREEK PILLOW	8300	3/01/87	---	10.4	11.8	11.4
NEVADA CREEK PILLOW	6480	3/01/87	---	7.1	10.6	11.4
NEW WORLD	6900	2/24/87	38	9.4	9.9	12.5
NEWTON MOUNTAIN	5600	2/24/87	62	18.5	21.5	31.4
NEZ PERCE CMP PILLOW	5650	3/01/87	---	8.1	12.5	13.2
NEZ PERCE CAMP	5650	2/27/87	31	8.2	12.2	13.5
NEZ PERCE CREEK	6600	2/23/87	30	3.9	6.5	6.2
NEZ PERCE PASS	6570	2/27/87	32	9.0	14.6	15.0
NOISY BASIN PILLOW	6040	3/01/87	---	20.3	31.5	33.4
N.F. ELK CR PILLOW	6250	3/01/87	---	6.2	10.6	11.2
N.F. ELK CREEK	6250	2/27/87	25	6.3	9.6	10.5
NORTH MEADOW	7500	2/26/87	35	6.6	6.8	7.0
N.E. ENTRANCE PILLOW	7350	3/01/87	---	4.6	8.9	8.2
NORTHEAST ENTRANCE	7350	3/01/87	21	4.3	8.0	8.4
NOTCH	8500	2/27/87	40	7.7	9.3	13.2
OPHIR PARK	7150	2/22/87	35	9.2	13.8	15.0
PETERSON MDW PILLOW	7200	2/26/87	---	6.4	8.5	9.0
PETERSON MEADOWS	7200	2/26/87	28	6.0	9.2	8.5
PICKFOOT CREEK	6650	2/23/87	26	5.3	8.7	9.9
PICKFOOT CRK PILLOW	6650	3/01/87	---	7.7	8.3	9.4
PIKE CREEK PILLOW	5930	3/01/87	---	20.7	19.9	23.6
PIPESTONE PASS	7200	2/23/87	27	3.2	4.7	4.2
PLACER BASIN PILLOW	8830	3/01/87	---	13.3	15.2	13.6
PORCUPINE PILLOW	6500	3/01/87	---	3.1	4.7	6.5
PORCUPINE	6500	2/24/87	10	2.4	5.4	6.5
POTOMAGETON PARK	7150	2/25/87	32	6.8	11.4	13.0
RED MOUNTAIN	6000	2/26/87	42	10.0	13.3	16.7
RED TOP	5260	2/24/87	54	17.0	16.5	25.5
ROCK CREEK	5600	2/24/87	23	4.7	6.2	8.6
ROCK CREEK MEADOW	8160	2/25/87	49	12.0	17.4	17.9
ROCKER PEAK	8000	3/02/87	28	7.3	12.5	12.6
ROCKER PEAK PILLOW	8000	3/01/87	---	8.0	16.3	12.5
ROCKY BOY	4700	2/26/87	8	1.6	1.8	4.2
ROCKY BOY PILLOW	4700	2/26/87	---	3.4	3.8	5.2
SACAJAWEA	6550	2/24/87	31	6.1	8.7	12.5
SADDLE MTN PILLOW	7900	3/01/87	---	13.2	21.5	22.6
SADDLE MOUNTAIN	7940	2/25/87	46	13.4	22.5	22.0
SENTINEL CREEK	8300	2/25/87	45	11.7	15.2	20.1
SHOWER FALLS	8100	2/25/87	44	11.9	14.5	19.6
SHOWER FALLS PILLOW	8100	3/01/87	---	13.2	16.4	20.3
SILVER RUN	6630	2/25/87	15	3.2	2.9	5.0
SILVER RUN PILLOW	6630	3/01/87	---	3.9	4.7	5.4
SKALKAHO PILLOW	7260	3/01/87	---	13.4	19.7	21.1
SKALKAHO SUMMIT	7250	2/26/87	49	14.8	22.3	22.7
SKYLARK TRAIL PILLOW	6200	3/01/87	---	18.7	24.8	27.9
SLAG-A-MELT LAKE	8750	3/01/87	45	11.8	22.1	22.5
SLIDE ROCK MOUNTAIN	7100	2/25/87	35	8.0	11.1	13.8
SMUGGLER MINE	6960	2/27/87	29	7.0	8.5	8.6
S.F. SHIELDS PILLOW	8100	3/01/87	---	7.9	12.9	15.1
S.F. SHIELDS	8100	2/24/87	47	11.2	17.6	20.6

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
SPUR PARK PILLOW	8100	3/01/87	---	8.8	20.1	19.0
SPUR PARK	8100	2/25/87	31	7.0	19.7	18.1
STAHL PEAK PILLOW	6030	3/01/87	---	27.9	26.3	31.7
STEMPLE PASS	6600	2/27/87	24	5.2	7.5	8.8
STORM LAKE	7780	2/26/87	32	7.3	11.0	11.0
STRYKER BASIN	6180	2/24/87	75	24.9	22.8	28.9
STUART MILL	6500	2/24/87	22	4.3	6.5	5.8
SUCKER CREEK	3960	2/26/87	4	.2	.0	.4
TAYLOR ROAD	4080	2/26/87	4	.4	.0	3.4
TEN MILE LOWER	6600	2/26/87	20	4.0	6.1	6.5
TEN MILE MIDDLE	6800	2/26/87	30	6.2	11.0	9.7
TEN MILE UPPER	8000	2/26/87	30	7.0	11.0	11.8
TEPEE CREEK PILLOW	8000	3/01/87	---	7.2	12.0	11.5
TEPEE CREEK	8000	3/03/87	35	9.1	12.2	12.9
TIMBERLINE CREEK	8850	2/23/87	28	6.8	13.6	11.8
TRAIL CREEK	7090	3/02/87	24	5.4	8.8	7.0
TRUMAN CREEK	4060	2/28/87	14	2.8	5.2	3.8
TWELVEMILE PILLOW	5600	3/01/87	---	11.1	15.5	17.0
TWELVEMILE CREEK	5600	3/03/87	51	15.6	18.7	20.3
TWENTY-ONE MILE	7150	2/27/87	31	6.7	13.7	15.5
TWIN LAKES PILLOW	6400	3/01/87	---	25.0	28.4	36.9
TWIN LAKES	6510	3/03/87	85	28.2	31.5	36.5
WALDRON PILLOW	5600	3/01/87	---	7.6	8.9	9.4
WALDRON	5600	3/02/87	31	7.4	9.2	9.2
WARM SPRINGS	7800	3/03/87	38	10.0	17.8	19.9
WARM SPRINGS PILLOW	7800	3/01/87	---	11.4	20.8	22.7
WEST ROSEBUD	7500	2/25/87	24	5.6	10.2	9.2
WEST YELL'ST PILLOW	6700	2/27/87	---	4.3	10.4	8.2
WEST YELLOWSTONE	6700	2/27/87	24	5.0	11.5	10.7
WHISKEY CREEK PILLOW	6800	3/01/87	---	8.8	17.9	14.6
WHISKEY CREEK	6800	2/27/87	40	10.4	21.6	17.7
WHITE MILL PILLOW	8700	3/01/87	---	13.1	24.8	21.7
WHITE MILL	8700	2/25/87	48	12.9	28.2	23.9
WHITE PINE RIDGE	8850	3/02/87	29	5.7	4.4	4.5
WILLOW CREEK	6500	2/25/87	30	6.0	6.4	7.4
WOOD CREEK PILLOW	5960	3/01/87	---	6.3	8.3	9.5
WRONG CREEK	5700	2/26/87	33	7.8	8.6	12.5
WRONG RIDGE	6800	2/27/87	41	11.4	14.5	17.0

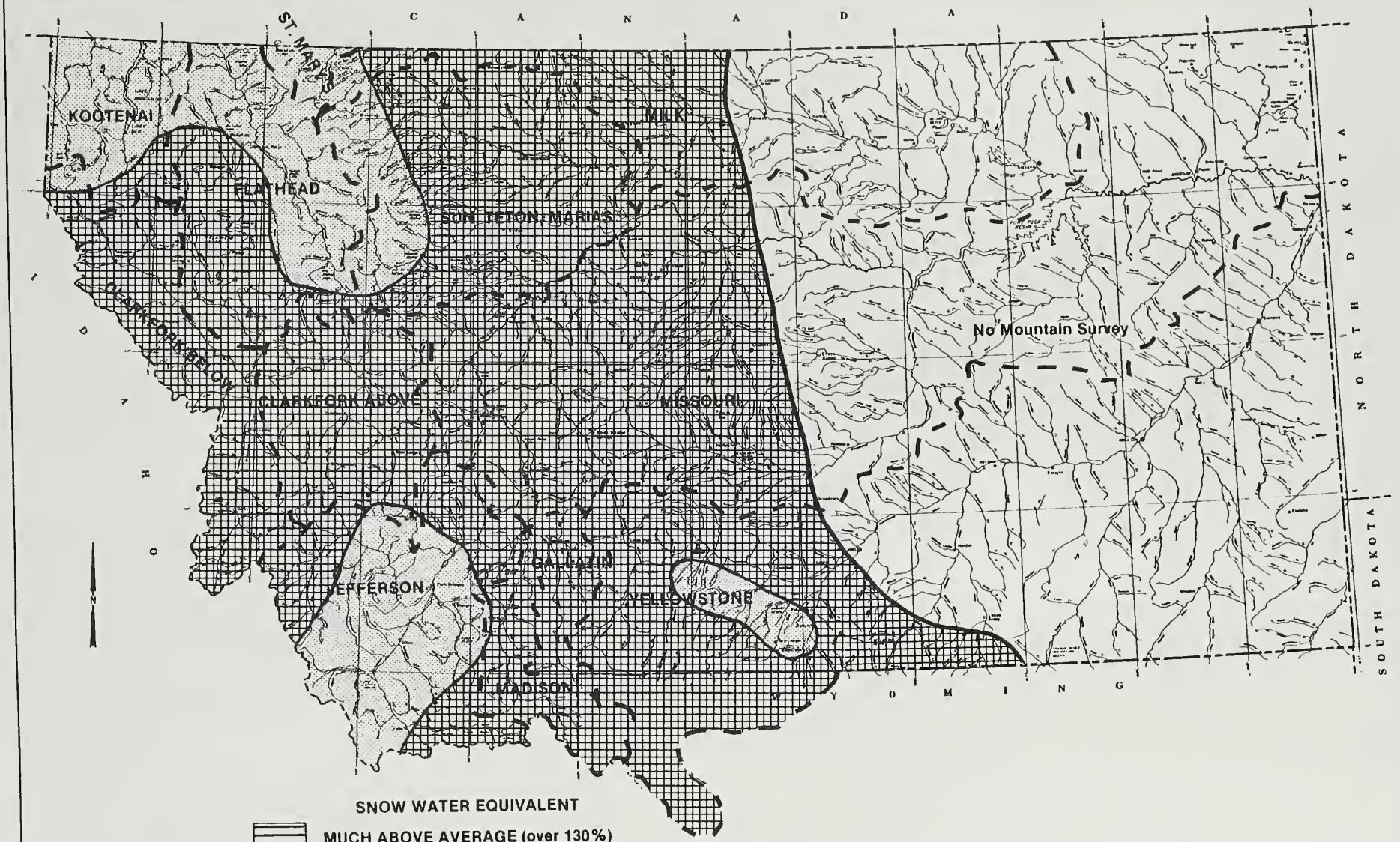
Valley Precipitation



Over 130%
110 - 130%
90 - 110%
70 - 90%
Under 70%

Source: NWS
Great Falls, MT

FEBRUARY 1987



MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296-1

The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canadian

Department of the Environment
- Atmospheric Environment Service
- Water Management Service

British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section

Alberta Environment
- Technical Services Division

Federal

U.S. Department of Agriculture
- Forest Service

U.S. Department of the Army
- Corps of Engineers

U.S. Department of Commerce
- NOAA, National Weather Service
- National Environmental Satellite Service

U.S. Department of the Interior
- Bureau of Indian Affairs
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation

U.S. Department of Energy
- Bonneville Power Administration

State

Montana Conservation Districts
Montana Department of Fish, Wildlife, and Parks
Montana Department of Natural Resources and Conservation
Montana Department of State Lands
Montana State University - Agricultural Experiment Station
University of Montana - School of Forestry

Private

Big Sky of Montana
Butte Water Company
Confererated Salish & Kootenai Tribes
Flathead Valley Comminity College
Montana Power Company
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish information for the snow survey reports.
Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
Federal Bldg., Rm. 443
10 East Babcock Street
Bozeman, MT 59715

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

THIRD-CLASS BULK RATE
POSTAGE AND FEES PAID
USDA - SCS

PERMIT NO G-267

THIRD CLASS MAIL

Montana
Water Supply Outlook

and

Federal-State-Private
Cooperative Snow Surveys

SOIL CONSERVATION SERVICE

☆ U.S. GOVERNMENT PRINTING OFFICE: 1987—791-131